Presentation to U.S. Army Corps of Engineers-Wilmington District

Increased Water Withdrawal for the Philpott Water Filtration Plant

CHA
design/construction solutions

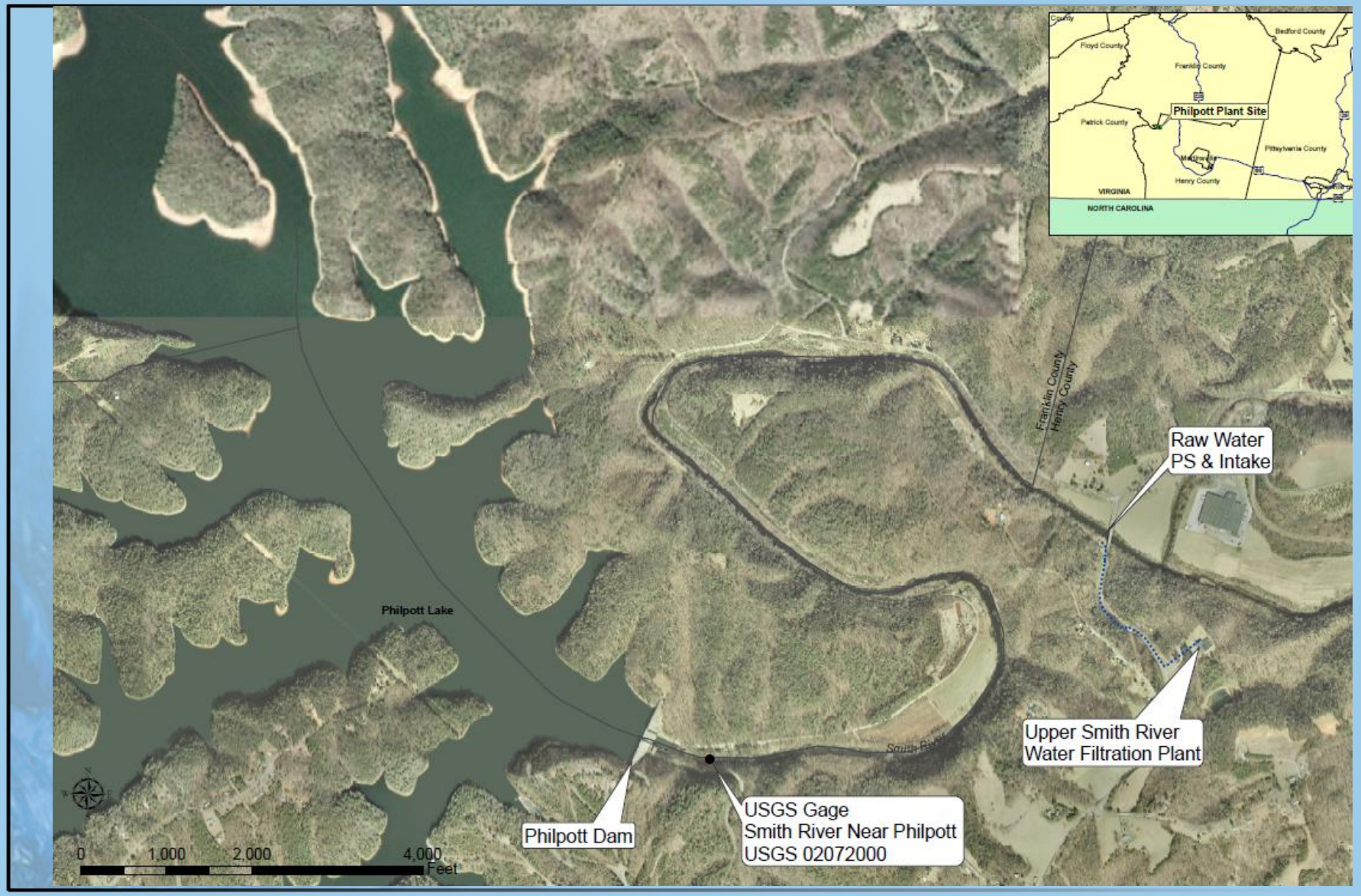
Program Objectives

- Increase Water Production at HCPSA Philpott Water Treatment Plant to:
  - Support Economic Redevelopment of the Henry County/Martinsville Area
  - Provide High-Quality Drinking Water to an Expanded Service Area
  - Comply with Virginia Department of Health Regulations
- Increase Philpott Dam Release by 2/4 MGD (3/6 cfs) to Support Increased Water Production

Current Philpott Water Filtration Plant Operations

- 4 MGD Treatment Capacity
- Withdrawal Point in Smith River ~3 Miles Downstream of Philpott Dam
- Serves Henry County and Parts of Pittsylvania & Patrick Counties
- Current 401 Withdrawal Permit
  - Issued in 1983
  - 4 MGD Withdrawal Limit
  - Withdrawal limited if flows at Philpott Gage < 20 cfs

Current Philpott Water Filtration Plant Operations



Philpott Water Filtration Plant Production

- Current Water Demand ~3 MGD (75% of design capacity)
- Virginia Department of Health Requires Formal Plan at 80%
- Economic development will increase demand.

VDH VIRGINIA DEPARTMENT OF HEALTH
Protecting You and Your Environment

Economic Development

- Economic Development is a Local and State Priority
- Unemployment Rate in Henry County/Martinsville: ~ 9%
- Martinsville-Henry County Economic Development Corp.
  - Very actively recruiting new and expanded industrial/commercial opportunities
- Recent Economic Development Successes:
  - Kilgour Industries (announced January 2014; 155 jobs)
  - RTI - New Major Industrial User
  - ICF International
  - Laminate Technologies
  - Expansions:
    - Commonwealth Laminating
    - GSI
    - Monogram
    - Applied Felts
    - GS Industries
  - Industries need water for processes & facility staff use (15-35 gpd/person)

Economic Development

(continued)

- Patriot Centre Industrial Park
- Commonwealth Crossing Business Centre
- Martinsville DuPont Site
- North Bowles Industrial Park

Increased Capacity Needed to:

- Meet Future Demand
- Comply with Drinking Water Regulations
- Support Continued Industrial and Commercial Development

Options Evaluated for Increased Production from HCPSA Philpott WTP

1. Increased Withdrawal from Smith River

   HCPSA Desired Option

2. Off-line Storage with Increased Withdrawal During High Flow Periods

   Poor Water Quality

3. Direct Withdrawal from Philpott Reservoir

   Too Expensive; Requires Re-allocation

Options Evaluated for Increased Production from HCPSA Philpott WTP

4. Additional Release from Philpott Reservoir

   USFWS Recommended;
   Requires Re-allocation

5. Purchase from Martinsville

   Not VDH Compliant-disinfection by-products do not meet standards

6. Groundwater Wells

   Volume and quality not reliable

Permit Application

- January 2012 the PSA submitted a JPA to Virginia Marine Resource Commission (VMRC), DEQ and U.S. Army Corps of Engineers
- DEQ issues withdrawal permits; other agencies provide comments
- USFWS & VDGIF Response
  - Believe that Option 1 could have adverse impacts upon the aquatic system (logperch)
  - Options 3 or 4 preferred (direct withdrawal or increased release from Philpott Reservoir)
  - Section 7 Consultation recommended if proposed Option 1 is pursued

New Approach-Modified Option 4 Additional Release from Philpott Reservoir

- October 2012 – Meeting with USFWS and VDGIF
  - Discussed concerns for Option 1
  - Concerns included "low release" weekend flows
  - Potential for multiple, lengthy and costly additional studies was presented by the agencies
  - Agencies indicated no guarantee for ultimate approval
  - Indicated strong support for Modified Option 4

- HCPSA Decided to Investigate Feasibility of Option 4 modified for Release of Additional Water through the Small "House" Turbine

Additional Studies

1. *Stream Temperature Modeling of the Smith River*
    1. Purpose: Examine effects of increased continuous discharge on the average temperature change.
    2. Results: Increasing Dam discharge up to 25 cfs had minimal impact on Smith River temperatures.

2. *James Spiney Mussel Survey*
    1. Determine if this Endangered species was present
    2. Result: Not present

Agency Project Approval

- USFWS: Agency Opinion issued December 2013:
  1. James Spinymussel
     - Does not currently occur at the project site
     - The project is not likely to adversely affect this species
  2. Roanoke Logperch
     - Temperature change for the proposed alternative will not affect Roanoke logperch
     - The project is not likely to adversely affect this species
  3. No further comments on project.
- VDGIF: December 2013 email:
  - No further comments on project.

Current Philpott Dam Operations and Smith River Information

Philpott Dam Operations

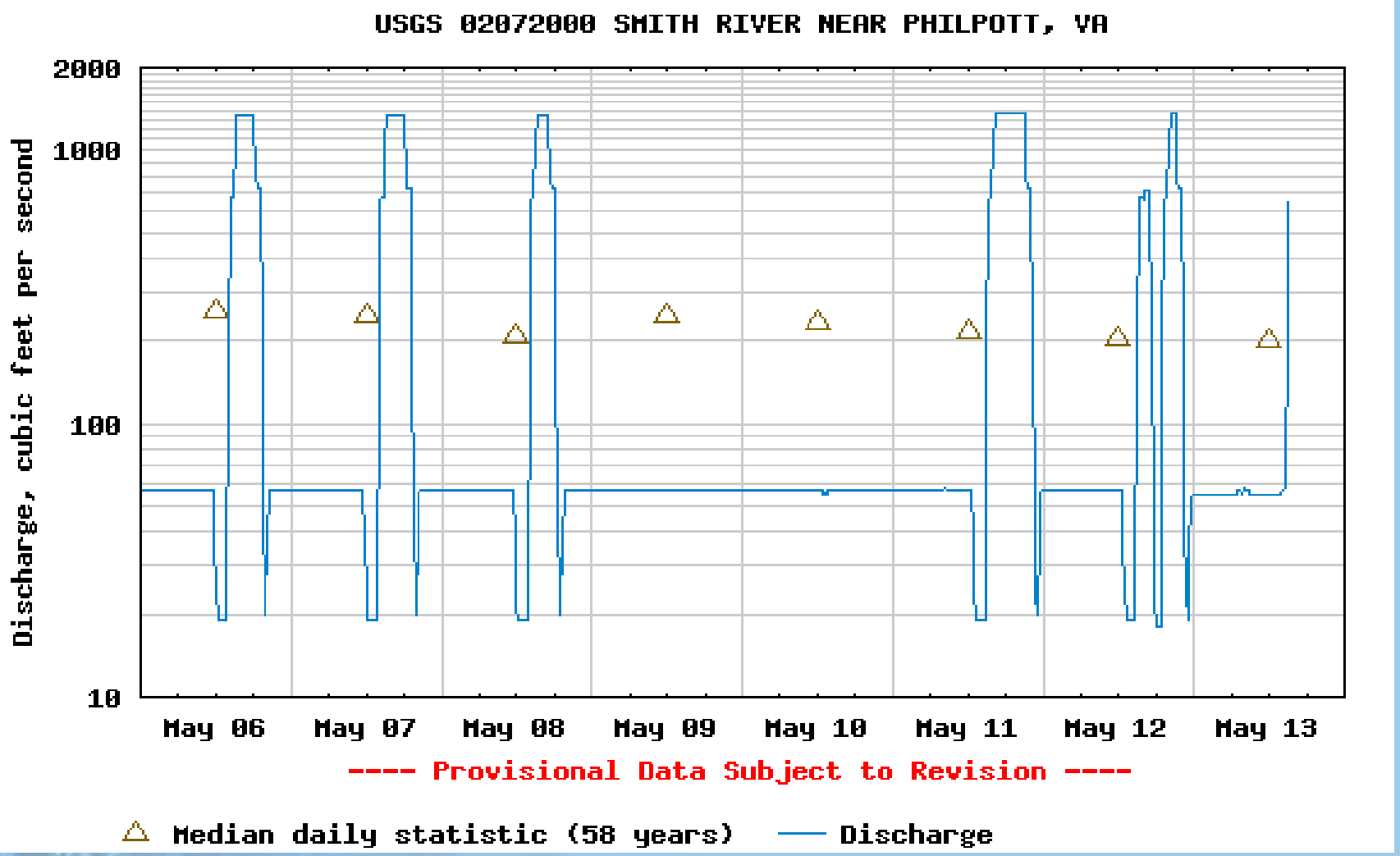
- Dam Operated by U.S. Army Corps of Engineers
- Purposes
  - Flood Control
  - Hydroelectric Power Generation
  - Fish/Wildlife/Recreation
- Operations based on Water Control Plan and Reservoir Regulation Manual
- Plan Includes Minimum Flow at Stanleytown, Fieldale, and Martinsville
- Basset Gage Target Flow Minimum = 60 cfs

Philpott Dam Operations

- Hydroelectric Power Generation
  - 2 Large Turbines & 1 Small "House" Turbine

- Typical Operations
  - 1 or 2 Large Turbines (750 cfs maximum discharge each)
    - Operated During Scheduled Peaks
    - Typically Monday through Friday
    - Number of turbines and duration of operation varies based on reservoir capacity and need
  - Small Turbine (55 cfs maximum discharge)
    - Before May 2010
      - Weekends and weekdays when large turbines are off (during non-peak periods)
      - No turbines 2.5 hours before and 1 hour after large turbine runs
    - After May 2010 (Continuous)

Smith River Flow
Pre-May 2010 Conditions

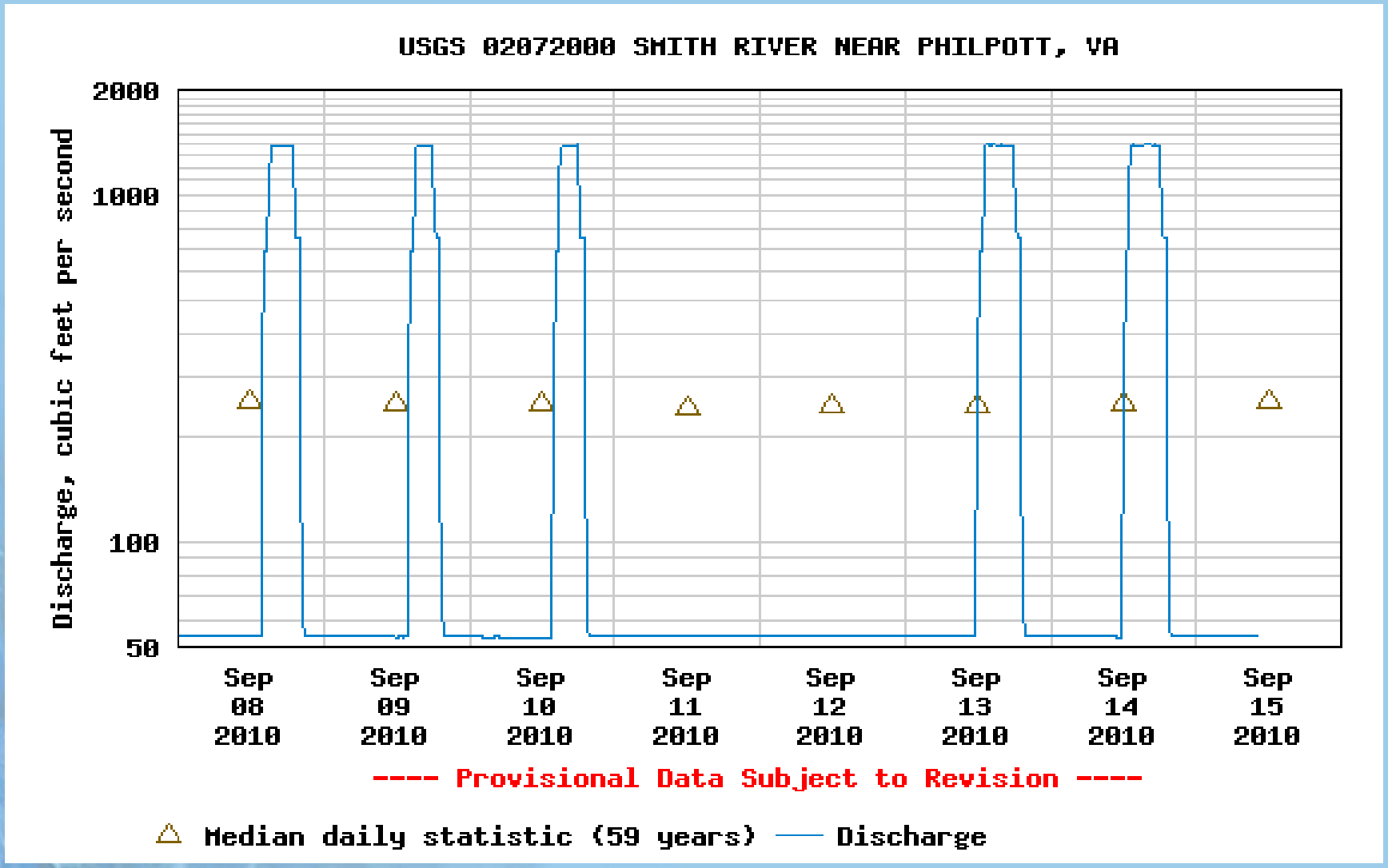


Data from May 2009; May 9 is Saturday, May 10 is Sunday

May 2010
Dam Discharge Adjustment

- Eliminated "no-release" period with continuous small turbine operations
  - Reduced wear and tear from starting and stopping small turbine
  - Integrated as a Corps of Engineers Philpott Dam Operational Procedure
- Additional Flow:
  - 3.5 hours (and more) @ 30 CFS = 2.4 MGD +

Smith River Flow
Post May 2010 Conditions



Meeting with Corps of Engineers

- Met with Wilmington District staff - Feb. 2014
- Presented program summary and the basis and need for additional Philpott Dam release
- Requested release of 2 MGD through small house turbine to offset increased PSA withdrawal
- Corps indicated:
  - They would not increase discharge as requested
  - Re-allocation was required to allocate part of reservoir for “water supply”

Parallel Paths Approach

- Current water demand projections suggest demand will exceed 4 MGD in 3-4+ years
- WTP design and construction to take 3 years

- Parallel Paths:
  1. DEQ to proceed with issuing a permit for 6 MGD withdrawal *while*
  2. HCPSA works with COE for Re-allocation and increased Philpott Dam releases (or finds another suitable alternative)

Corps of Engineers Re-allocation Process

- Re-allocation requires:
  - Extensive evaluation / studies including"
    - Environmental impacts
    - Determination of % of reservoir needed to meet HCPSA needs (2 or 4 MGD)
  - HCPSA Commitment to fund these studies
    - Originally estimated to be ~$500,000
    - Now determined to be ~$679,000!
  - HCPSA Commitment to pay proportionally based on percentage of reservoir allocation:
    - Repairs, Rehabilitation, Replacement
    - Reservoir O&M

Corps of Engineers Re-allocation Process

- HCPSA requested additional information on Re-allocation process, starting in March 2014
- Corps has been slow to respond—information has been provided over the past 18 months
- HCPSA provided draft documents for Corps use to expedite the process
- Recently, the requested information and documentation has been provided

DEQ VWP Permit Actions

- DEQ will prepare the water withdrawal permit
- DEQ conducted initial modeling of withdrawal effects on Smith River flows
- HCPSA requested additional modeling based on proposed weekend dam releases
- Modeling results are favorable
- Next step, DEQ to confer with VDGIF to determine if this is sufficient to address agency concerns

Path Forward

- Recently local interest groups have been working with Dominion Power and our U.S. Senators and Representatives towards a permanent weekend release, originally for recreation and ecotourism, however, this will also benefit the aquatic ecosystem and potentially the Philpott Water Filtration Plant water withdrawals.